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Reducing Distortions to Agricultural Incentives: Progress, Pitfalls and Prospects

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Abstract

Most of the world's poorest people depend on farming for their livelihood. Earnings from farming in low-income countries are depressed partly due to a pro-urban bias in own-country policies, and partly because richer countries (including some developing countries) favor their farmers with import barriers and subsidies. Both sets of policies reduce national and global economic growth and add to inequality and poverty in developing countries. Acknowledgement of that since the 1980s has given rise to greater pressures for reform, both internal and external.

Over the past two decades numerous developing country governments have reduced their sectoral and trade policy distortions, while many high-income countries continue with protectionist policies that harm developing country exports of farm products.

Recent research suggests that the agricultural protectionist policies of high-income countries reduce welfare in many developing countries. Most of those studies also suggest that full global liberalization of merchandise trade would raise value added in agriculture in developing country regions, and that much of the benefit from global reform would come not just from reform in high-income countries but also from liberalization among developing countries, including in many cases own-country reform.

These findings raise three key questions that are addressed in turn in this paper: To what extent have the reforms of the past two decades succeeded in reducing distortions to agricultural incentives? Do current policy distortions still discriminate against farmers in low-income countries? And what are the prospects for further reform in the next decade or so?

Keywords: Distorted incentives, agricultural and trade policy reform

JEL codes: F13, F14, Q17, Q18

Reducing Distortions to Agricultural Incentives: Progress, Pitfalls and Prospects

Most of the world's poorest people depend on farming for their livelihood. Earnings from farming in low-income countries are depressed partly due to a pro-urban bias in own-country policies, and partly because richer countries (including some developing countries) favor their farmers with import barriers and subsidies. Both sets of policies reduce national and global economic growth and add to inequality and poverty in developing countries. Acknowledgement of that since the 1980s has given rise to greater pressures for reform, both internal and external.

Over the past two decades numerous developing country governments have reduced their sectoral and trade policy distortions (World Bank 2001, Ch. 2), and many now argue high-income countries should reduce their remaining protectionism that harms developing country exports of farm products. Indeed they have been insisting on such commitments on farm policies in the WTO's current round of multilateral trade negotiations (the Doha Development Agenda) before they will consider offering any further reform commitments of their own.

Recent research by Anderson, Martin and van der Mensbrugghe (2006a,b) and Tangermann (2005) supports earlier findings (e.g. by Anderson et al. 2001) that the agricultural protectionist policies of high-income countries reduce welfare in many developing countries. Those studies, and a forthcoming one by Anderson and Valenzuela (2007), also suggest that full global liberalization of merchandise trade would raise value added in agriculture in most developing country regions, and that much of the benefit

from global reform would come not just from reform in high-income countries but also from liberalization among developing countries, including in many cases own-country reform.

These findings, together with the concerns raised in the AAEA Fellows Addresses by Pinstrup-Andersen (2002) and Falcon (2005), raise three key questions that are the subject of this paper: To what extent have the reforms of the past two decades succeeded in reducing distortions to agricultural incentives? Do current policy distortions still discriminate against farmers in low-income countries? And what are the prospects for further reform in the next decade or so? Those questions are addressed in turn, after first reviewing briefly the development of price and trade distortions up to the mid-1980s. The paper concludes by suggesting areas where improvements in economic analysis of the causes and effects of such distortionary policies could encourage further reform.

Policy developments to the mid-1980s

Historically, countries have tended to gradually change from taxing to subsidizing agriculture relative to other sectors in the course of their economic development – although less so, and at a later stage of development, the stronger a country's comparative advantage in agriculture (Anderson and Hayami 1986; Lindert 1991). Exceptions were rich countries with an extreme comparative advantage in agriculture (Australia, New Zealand) and poor countries with an extreme comparative disadvantage in agriculture (South Korea, as with Japan earlier, and some oil-rich states). Poor-country farmers also have been disadvantaged by a pro-urban bias in public investments in infrastructure and

human capital (education, health, agricultural R&D), and sometimes also by being forced to sell at low prices so the government could depress urban consumer food prices (Byerlee and Sain 1986; Pinstrup-Andersen 1988). Within the agricultural sector of each country, import-competing industries tended to be less disadvantaged than exporting ones (Krueger, Schiff and Valdes 1988; Tyers and Anderson 1992; Herrmann et al. 1992; Thiele 2004). Krueger, Schiff and Valdes also found that distortions to agricultural incentives were more negative the lower a country's per capita income, with their measure taking into account not only direct distortions to agricultural prices, such as export taxes, but also indirect ones which attracted resources away from agriculture, such as manufacturing protection and overvalued exchange rates.

As well as that cross-country evidence, a third illustration of the association between agricultural protection and per capita income is provided by time series estimates for Northeast Asia. As Japan began to industrialize in the first half of the twentieth century, it imposed an ever-higher tariff on rice imports. Following their independence, Korea and Taiwan – like former colonies elsewhere – initially chose policies that discouraged agriculture; but their rapid industrialization was soon accompanied by less taxation and then increasing protection for farmers, following Japan's example (figure 1).

The anti-trade bias of policies in poor countries was often argued as being necessary for governments to raise enough government revenue to provide public goods, but that is unconvincing on at least two grounds. First, a uniform export tax (which, by Lerner's (1936) Symmetry Theorem is equivalent to an import tax) would have been much more efficient than the mixture of unequal import and export taxes plus

quantitative trade restrictions that was used along with overvalued and often multiple foreign exchange rates. Second, if tax revenue raising was the motive for sectoral distortions to incentives, how does one explain the subsidies for fertilizer, farm credit and irrigation that numerous democratic developing countries provide their farmers – the benefits of which are typically in proportion to farm size and so highly inequitable (see, e.g., Gulati and Narayanan 2003)?

A more convincing explanation of why poor countries penalize agriculture and rich countries subsidize it has to do with the differing distributional effects of government interventions and the relative costs of lobbying the government by the key interest groups (Anderson 1995). Because farmers are mainly subsisting in poor agrarian economies, their real incomes are not greatly affected by increases in farm output prices – whereas the urban population is far smaller and more easily able to organize, and food is an important part of consumer budgets. As economies develop, however, farmers become fewer in number and easier to organize. They also become more commercially oriented such that their real incomes are more strongly influenced by agricultural output prices. Meanwhile, the urban population becomes larger and hence more difficult to organize, and the importance of food in consumer budgets and the setting of wage rates declines. The end result can be a rapid increase in agricultural protection rates in high-growth middle-income economies.

Policy developments – and pitfalls – since the mid-1980s

Left unchecked, as economies in developing countries grow their governments might be expected to begin protecting agriculture, thereby replacing one costly policy regime with another. That prospect contributed to the resolve of several groups in the 1980s to try to counter national political forces with international influences. For example, agricultural-exporting countries formed the Cairns Group and succeeded in ensuring that an agreement on agricultural reform was included in the Uruguay Round of multilateral trade negotiations. Over the same period, and following two World Development Reports on the topic (World Bank 1982, 1986), international financial institutions made a more concerted effort to encourage developing countries to reduce unilaterally their distortions against agriculture. Accession to preferential trading agreements and to the World Trade Organization (WTO), and the demise of communism, helped in some cases too.

The net effect of these developments on import tariffs is now evident. Simple average ad valorem tariffs have fallen considerably over the past two decades in low-, middle- and high-income countries (table 1). They have fallen less, and still remain higher, for agriculture than non-agriculture (and would even more so if specific tariffs were included), but if there were no other distortions these changes would suggest a decline in the anti-trade bias.

Farmers in developing countries have benefited indirectly from their governments' cuts not only in manufacturing protection but also in distortions to exchange rates. Overvaluation can discourage production of all tradables relative to nontradable goods and services (except if the government allows a parallel currency market to develop, in which case the outcome depends on which groups of importers are

still favored). An indication of the decline in exchange rate distortions is the huge reduction in black market premia in markets for foreign currency in all developing country regions. For a sample of 59 developing countries for which data are available, table 2 reports that the trade-weighted average premium has fallen from over 140 percent in the 1960s to around 80 percent in the 1970s and 1980s and to just 9 percent in the early 1990s. Direct taxation of agricultural exports has diminished too, although some still remains, including implicitly via parastatal marketing enterprises.[1]

While there is still plenty of piecemeal evidence of anti-agricultural policies in many developing countries, including via informal taxes by local and provincial governments as in China and Sub-Saharan Africa (Lin et al. 2002, Townsend 1999), some analysts suggest the bias against agriculture has now disappeared (see, e.g., the national general equilibrium analyses in Jensen, Robinson and Tarp 2002). However, numerous more-advanced developing countries are moving from an anti-agricultural bias to being increasingly pro-agricultural, particularly for some import-competing food industries. That bias, which can be just as welfare-reducing as an anti-agricultural bias, is at least partly in response to the rapidly widening gap between farm and non-farm household incomes that often accompanies rapid industrialization – even though farm incomes might be rising in absolute terms (Hayami 2005).

In OECD countries, the average agricultural producer support estimate (PSE) has fallen from 37 percent in 1986-88 (the beginning of the Uruguay Round of trade negotiations) to 30 percent in 2005, but that nonetheless represents more dollars and Euros now than two decades ago. True, the proportion of the PSE that is now at least somewhat decoupled from production has risen from less than one-tenth to more than

one-quarter over that period (figure 2). But not all the re-instrumentation is towards less production- and trade-distorting measures. Of particular note is the growth in non-tariff import barriers ostensibly for food safety or environmental reasons. Two cases that have already been subject to WTO dispute settlement are the EU's restrictions on imports of beef from cattle that have been fed growth hormones, and of food and feed products containing genetically modified organisms (GMOs). In both cases the EU was found by the WTO's panel and appellate body to be not in conformity with its obligations, yet neither case has been settled to the satisfaction of the complainants.

As for trade between high-income and developing countries, the EU claims leadership in providing non-reciprocal preferential access to its markets for its former colonies in Africa, the Caribbean and the Pacific (ACP) under the Cotonou Agreement. Earlier this decade it also began providing duty-free and quota-free access to its markets for 'everything but arms' to UN-designated Least Developed Countries (LDCs), although it also excluded services and it continues to delay the opening of three sensitive food markets (bananas, rice and sugar). These measures *may* help the better-off ACP and LDC farmers with a marketable surplus although, in the case of ACP supplies subject still to quotas, most of the benefits accrue to the holders of EU import quotas (who are more likely to be from a European than an ACP country). But these preferential agreements necessarily are at the expense of very many more equally poor exporters in other (non-ACP, non-LDC) developing countries including China, Indonesia, India, Pakistan and Vietnam. Whether they are a net help to preference-receiving and other developing countries is an empirical question that can only be answered with an empirical model that incorporates all those trade preferences in its protection database.

Are current policies still harming farmers in developing countries?

What do the available protection database and model from Purdue University's Global Trade Analysis Project (GTAP) say about recent distortions? The database suggests that as of 2001, and consistent with table 1, the import-weighted average nominal ad valorem tariff and subsidy interventions were greater in agriculture than other primary sectors and manufacturing even in developing countries, although less so than in high-income countries. Using the GTAP model, Anderson and Valenzuela (2007) report the effects on agricultural value added (real net farm income) of full global liberalization of those import tariffs and agricultural subsidies. The results, reported in table 3, suggest that real net farm income would rise in all key developing countries and regions with a move to free trade. Moreover, that rise is greater than the increase in value added in non-farm sectors except in Sub-Saharan Africa (where the two rise by a similar amount). That is, according to the GTAP database and model, developing country farmers as a group are still being discriminated against by the structure of distortions as of 2001.

That estimated positive impact of such reform on farmers in Sub-Saharan Africa is consistent with results using another global economy-wide model known as Linkage. That model has been used by Anderson, Martin and van der Mensbrugghe (2006c) to explicitly address a question raised by Panagariya (2005), who suggests that such a region would be likely to lose from liberalization of at least OECD agricultural protection. The basis of Panagariya's suggestion has two elements. One is that net food-importing countries of the region would lose because OECD reform would raise

international food prices. The other is that many of the region's countries are LDCs or ACP countries and so get preferential access to the high-priced food markets of OECD countries, liberalization of which would cause preference erosion. But these are only two of the numerous aspects of this issue. Also relevant is what happens to the non-agricultural terms of trade for regions such as Sub-Saharan Africa (SSA), and to the prices of its agricultural exports that are not sold in preferential markets. So their impact on national economic welfare, and in particular on net farm incomes, needs to be examined as well.

Linkage modeling results addressing Panagariya's question find that the region's agricultural and food import price index rises, but so too does the export price index for those goods. Evidently the rise in demand for SSA exports enjoying little or no preferential access more than outweighs the reduced earnings from their exports that have been enjoying substantial preferences. And while the price of other imported goods also rises slightly, the price of SSA's exports of non-agricultural goods rises even more. The relative importance of each of these sets of price changes in contributing to the changes in regional economic welfare is summarized in table 4, which reveals two things. First, the negative contribution to SSA welfare from higher import prices is more than offset by the positive contribution from higher export prices (except for farm products in South Africa where they almost cancel out). Second, the contributions on both the export and import side are larger from non-agricultural than from agricultural price changes. So even though the price changes for SSA from high-income country agricultural liberalization are smaller for non-farm than farm products, the greater weight of non-farm products means their net positive welfare contribution to SSA via the terms of trade effect is

greater.[2] The overall impact on SSA net farm incomes is a boost of 7 percent, and the real value of the region's agricultural and food exports would rise by more than 80 percent (Anderson, Martin and van der Mensbrugghe 2006c, table 7).

Prospects for policy reform in the next decade

Since the process of reform is far from complete, pressures to open up markets will continue multilaterally, preferentially and unilaterally, while groups with vested interests in current policies will continue to counter-lobby to retain and increase sectoral assistance. How might these net out?

Multilaterally, the WTO membership has had agricultural tariff and subsidy cuts high on its Doha Development Agenda, but as of July 2006 the political willingness to reform varied too much between the key players for an agreement to be in sight. If no agreement is forthcoming by early 2007, and if the U.S. President is unable to secure a renewal of fast-track authority when it expires in July 2007, it could be several more years before that round of negotiations is concluded. Even then, the extent of reform agreed to could be quite modest. Three components in particular matter. One is the large 'binding overhang' in current tariffs and subsidies, which means large cuts in legally bound rates will be required to ensure real cuts in applied rates of subsidies and tariffs. Another is the exceptional treatment for 'sensitive' and 'special' farm products that subjects them to lesser cuts (and possibly to no tariff cap, should one be introduced for other products). The third is the extent to which developing countries are granted 'special and differential treatment' in the form of lesser cuts and longer phase-in periods, with

LDCs not required to reform at all. As shown by Martin and Anderson (2006), together those elements could be sufficient to wipe out entirely any immediate gain for low-income countries from agricultural reform under Doha – although the lowering of the 'binding overhang' could help agricultural exporters in future years of low international prices (Francois and Martin 2004) and would make it easier for subsequent rounds to make more-effective cuts. The outlawing of export subsidies also would be a gain to the subsidizing countries and to other food-exporting countries, albeit at the expense of food-importing countries currently enjoying lower import prices because of those subsidies.

Additionally, WTO could continue to contribute through the process of negotiating accession of new members. That process managed to extract large cuts in agricultural protection in China, whose tariffs and subsidies are now legally bound at low rates averaging less than 20 percent. If WTO accession can lead to low legal bindings on tariffs and subsidies for other large acceding countries (Russia, Ukraine, Kazakhstan, Vietnam, Iran), that could be a significant achievement if the counterfactual is rising support for agriculture in those economies. To appreciate this point, imagine what figure 1 above would have looked like if Japan and Korea, when they signed the General Agreement on Tariffs and Trade in 1955 and 1967 respectively, had been constrained like China now is: their nominal rates of protection also would be less than 20 percent, instead of ten times that rate.[3]

There are two consequences of the WTO's Doha round going into suspension in late July 2006. One is that some members will begin dispute settlement proceedings against others, particularly in agriculture now the 'peace clause' has expired. That always has the potential to bring about reform, but recent experiences with the WTO's beef

hormone, banana, and cotton cases demonstrate that this can be a long process with sometimes little or no liberalization emerging from it. The other consequence of Doha not progressing is that countries will again turn their attention to prospective regional and other preferential trading agreements (PTAs). Yet the record of those arrangements in freeing up agricultural markets is no better than that of multilateral negotiations.

The political economy of trade policy is not often conducive to unilateral reform. The current wave of globalization, however, is lowering both natural and governmental costs of doing business abroad. That raises the benefits from opening one's own economy and simultaneously raises the costs of poor economic governance, since capital flight to better-governed economies is becoming ever cheaper, easier and faster.

A second phenomenon altering the political economy of reform is the agricultural biotechnology revolution: it offers potentially high payoffs to early adopters, especially if the Doha round were to cause markets to open, while non-adopters may lose because of the price downturn following biotech adoption by others. This is clearest in the case of cotton (Anderson and Valenzuela 2006), but applies also in the case of rice and other foods (Anderson, Jackson and Nielsen 2005, Anderson and Jackson 2005). It is true even if those new varieties contain GMOs, so long as significant parts of the world do not require GM labeling.

A third phenomenon that is altering the political economy is the increasing concentration of firms in the food value chain. As processors and retailers exploit new economies of scale with falls in international transport and communication costs, and become more global in focus, they are becoming ever-stronger lobbyists for openness in markets abroad. Those nations that reduce barriers early will best position their agri-food

sectors and consumers to take advantage of this revolution. In practice for developing countries this means increasing contestability in the processing and marketing of their farm products and inputs, and focusing rural public expenditures more on reducing underinvestment in public-good institutions and infrastructures to lubricate that value chain rather than on inequitable and inefficient farm input subsidies.[4]

Where can the economics profession contribute more to the policy reform process?

Better empirical research on the extent, causes and effects of policy is needed to encourage developing countries to further reform their sectoral and trade policies.[5] Consider those three areas in turn.

Estimating the changing extent of distortions

Empirical analysis on the degree of interventions in agricultural markets has been provided for almost 20 years by the Secretariat of the OECD (2006) for developed countries plus Korea, Mexico, some of Europe's transition economies and a handful of large developing countries, in what are now called Producer Support Estimates (PSEs). No such comparable series has been generated for long periods for other developing countries since the Krueger, Schiff and Valdes (1988) study which covered the 1960-1984 period for 18 developing countries, apart from a nine-year update for the Latin American countries in that sample by the same country authors (Valdes 1996), and a comparable study of 7 central and eastern European countries (Valdes 2000). An

exception is a new set of estimates of nominal rates of protection since 1985 for a few key farm products in China, India, Indonesia and Vietnam (Orden et al. 2006).

Better PSE-type estimates of the extent of price distortions facing farmers and other producers would improve policy transparency directly by providing stand-alone indicators that are easily understood by participants in policy debate. If they show the relative contributions of different policy instruments to the aggregate PSE, they can also assist trade negotiators to select their priorities. And if they are provided in the right format they can supplement the GTAP protection database used by most global modelers, which currently relies mostly on applied tariff rates to represent distortions to agricultural prices in developing countries (see www.gtap.org).

Even though the latest protection estimates, for 2001, are a vast improvement over earlier estimates provided by GTAP, shortcomings remain. One is that there may be unused protection in such tariffs, for example due to duty exemptions and drawbacks (Ianchovichina 2004). It is also possible that nontariff import barriers such as quarantine restrictions or food quality standards exist such that the applied tariff understates the actual protection level. Indeed recent measures of the Trade Restrictiveness Index suggest that there is nearly as much import protection from nontariff measures as from tariffs (Kee, Nicita and Olarreaga 2006). Third, production or export taxes or non-tax export restrictions, or exchange rate distortions – all largely ignored in the GTAP protection database – may be still in place. A fourth is that value added taxes on agricultural products (and excise taxes on alcoholic beverages and tobacco) may be applied at the border on imported products but not – or not as fully – on domestically produced like products.[6] Informal (often illegal) taxes in cash or kind are often levied on farmers by

local governments too (Townsend 1999; Lin et al. 2002). Moreover, few developing country subsidies, including for farm inputs and to food consumers, are captured in the GTAP database.

Estimating the effects of current distortions and reform alternatives

Enormous progress has been made in the past two decades in using economy-wide models to estimate economic effects of past and prospective trade-related policy regimes. Recent examples include the continuing disaggregation of the GTAP database regions to individual countries, and the provision of bound and applied bilateral tariffs at the same (HS6) level of disaggregation so as to know what cut in applied tariffs and subsidies to expect from commitments to reduce WTO-bound rates. Planned further disaggregation of the database's products and regions over the next year or so will help, as will the inclusion of newly developed databases on bilateral international flows of labor and capital. With greater firm concentration in the value chain, it is becoming ever-more important to include imperfect competition and scale economies in economy-wide models too.

To capture more of the prospective economic gains from trade reform in economy-wide models, better dynamics need to be introduced. Recent research on the aggregate links between exports and productivity has been carefully examining the potential endogeneity of that interaction. Firm-level studies report evidence of productivity growth associated with learning-by-doing after firms enter exporting (Melitz 2003, Blalock and Gertler 2005, Fernandes and Isgut 2006). Van Biesebrock (2004) finds that African exporting firms had higher productivity before entering export markets, and

that their productivity levels, and their subsequent rates of productivity growth, grew after entering export markets. Girma, Greenaway and Kneller (2004) find both higher initial levels of productivity and higher productivity growth rates after entry into exporting. There are also potentially important gains from improvements in the quality of exports. Hummels and Klenow (2005) suggest that these improvements in quality are sufficiently rapid that the prices received by countries for the products that they continue to export actually rise – in contrast to traditional Armington models which generate a *reduction* in export prices when economies grow and exports expand. Making these modifications to models will not only provide larger and more realistic projections of production, consumption and trade changes, but also of the overall projected national and global welfare gain from trade reform.

Finally, the incorporation of regulations to foreign trade and investment in services is sorely needed, since there are indications that the costs of barriers to trade in services – including to farmers and agri-business – are very substantial.[7] But significant funding for a long-term research program will necessarily be required to make progress on this complex front.

Analyzing the political economy forces behind distortionary policies

Improving our understanding of the reasons behind the evolution of trade-related policies as economies grow is necessary partly because, as Stigler (1975, p. ix) says, "Until we understand *why* our society adopts its policies, we will be poorly equipped to give useful advice on how to change those policies." But it is also necessary so that we can include more-appropriate counterfactuals in model projections. As mentioned in

footnote 3, typically the status quo is adopted as the baseline case by modelers when in fact rising agricultural protectionism – and hence higher estimated welfare gains from reform – may well be more realistic.

Surveys of attempts to explain agricultural policies are available in Binswanger and Deininger (1997) and de Gorter and Swinnen (2002), while surveys focusing on explaining trade policy more broadly include Rodrik (1995) and Gawande and Krishna (2003). Following the pioneering theoretical work by Grossman and Helpman (2001, 2002), substantial econometric progress has been made in recent years to test elements of that theory but, as Ethier (2006) warns, that should not be the only approach. It is possible also to use economy-wide models to back out politicians' preferences from the estimated impacts of the protection structure on industry value added. Balaoing and Francois (2005) adopt that approach in analyzing EU trade policy. To use it for developing countries first requires bringing together comparable time series estimates of the structure of distortions in those countries. Then it will be possible to test hypotheses about trends over time and across industries, about changing choices of policy instruments (including the relative importance of exchange rate measures, indirect border measures such as manufacturing tariffs, and various agricultural price, trade and direct farm income measures), and about fluctuations in distortions around longer-run trends.

Moving forward

To progress this research agenda, a newly launched research project at the World Bank is revisiting the Krueger, Schiff and Valdes study but for a larger sample of countries. Its first phase is focusing on measuring the extent of direct and indirect

distortions to agricultural incentives since the 1950s, and providing a broad-brush analytical narrative explaining the evolution of each nation's policy regime over that period. This is providing a rich springboard for the project's second phase, which involves two streams of work. One will focus on empirical analysis of myriad economic effects[8] of those distortions using national and global economy-wide models. The other will focus in more detail on understanding the political economy forces behind the patterns of distortion across countries and over time, and behind the evolution in policy instruments used. This stream will draw in part on the distributional results emanating from modeling analyses.

If this research provides stronger evidence that agricultural protection and subsidies not just abroad but also at home are ineffective in helping small farm households escape from poverty, it would make it easier to persuade governments and development agencies that reducing agricultural price distortions in developing countries leads to pro-poor growth. Such an outcome would be all the more likely if reducing distortions were to be accompanied by complementary domestic reforms such as reducing public underinvestment in rural infrastructure and institutions.

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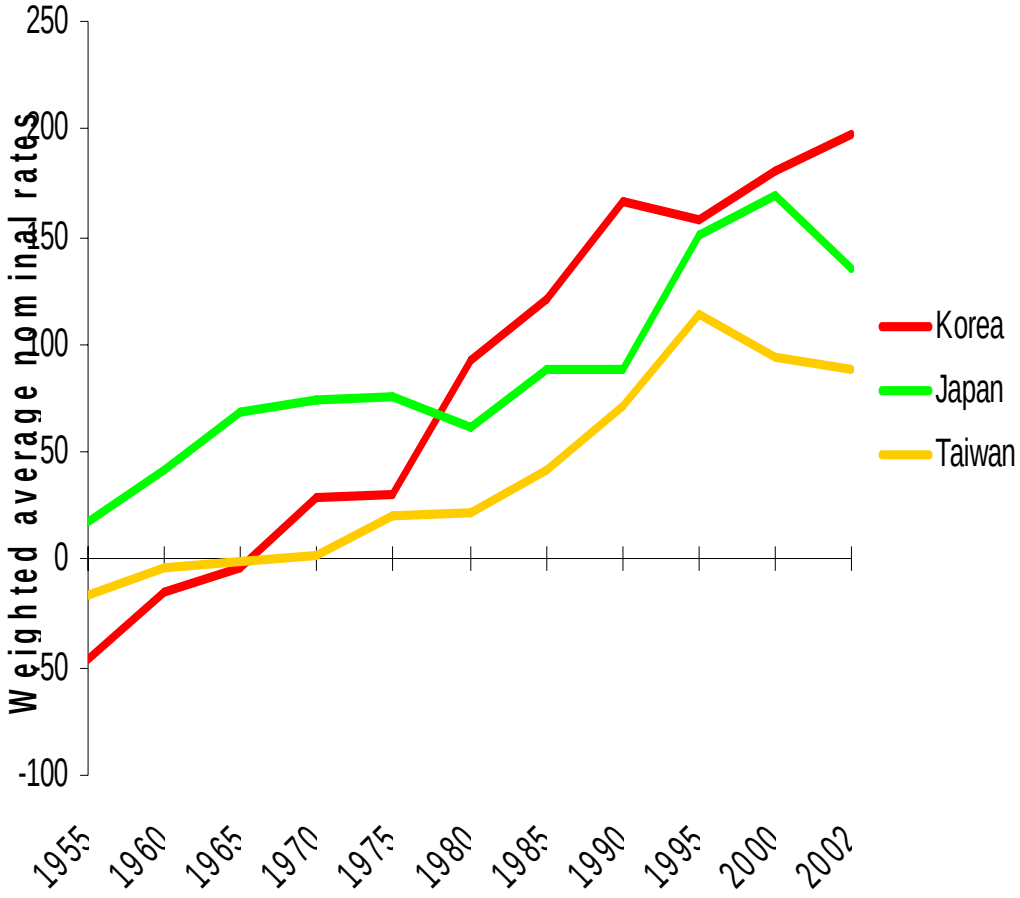
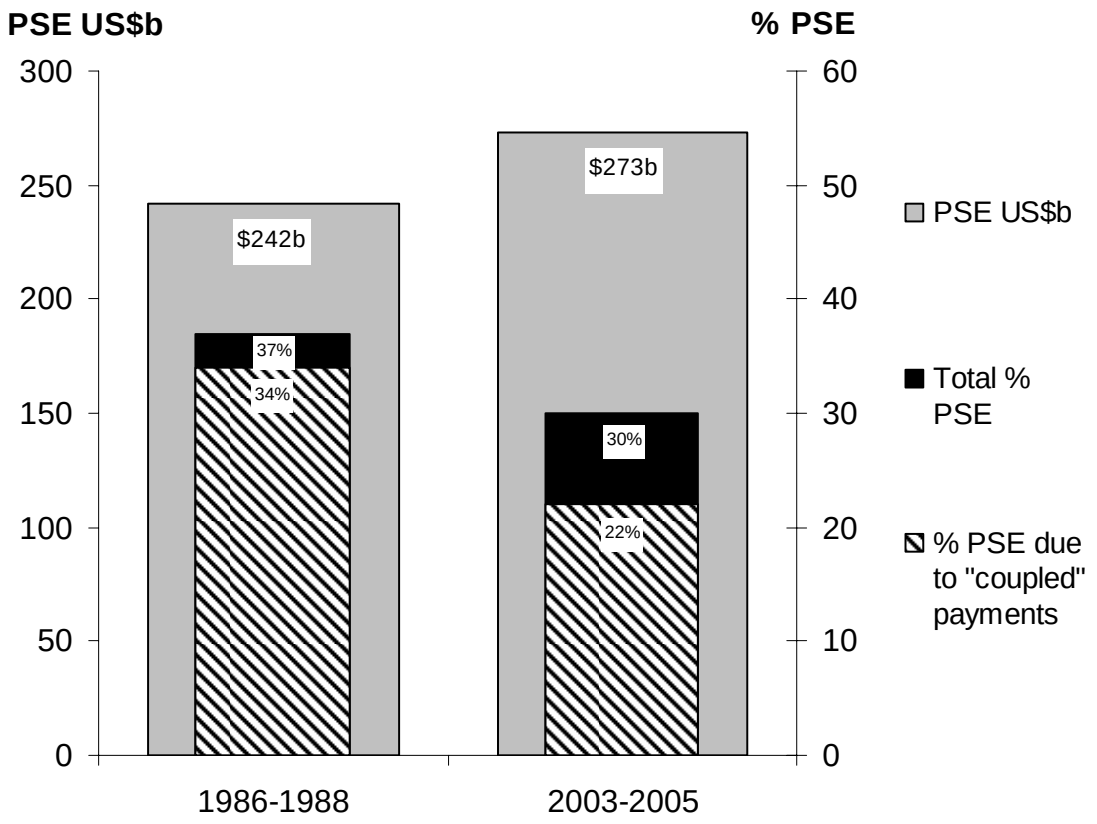
Figure 1. Nominal agricultural protection in Japan, Korea and Taiwan, 1955 to 2002 (percent)



Source: Anderson and Hayami (1986, Table 2.5), updated by Honma and Hayami (2006).

Figure 2. Agricultural producer support estimates (PSEs), OECD countries, 1986 to 2005



Source: Constructed from PSEs reported in OECD (2006).

Table 1. Import-weighted Average Applied ad valorem Tariffs,[a] Primary Agriculture, Processed Food and Other Importable Goods, 1988 to 2004 (percent)

Income group:	Sector:	1988-90	1995-97	2002-04
Low-income countries	Primary agric	15	10	9
	Processed food	40	16	23
	Non-agr goods	26	16	13
Middle-income countries	Primary agric	14	15	13
	Processed food	27	18	17
	Non-agr goods	20	11	7
High-income countries	Primary agric	3	12	15
	Processed food	7	9	5
	Non-agr goods	4	3	2

[a] Unfortunately the ad valorem equivalent of specific tariffs are not included in these estimates, which means they underestimate the total rates, especially for high-income agricultural products.

Source: UNCTAD TRAINS database, accessed from www.wits.org

Table 2. Black Market Exchange Rate Premia, Weighted Average Across 59 Developing Countries, 1960 to 1993 (percent)

	1960-69	1970-79	1980-89	1991-93
Region:				
North & Sub-Saharan Africa	23	45	75	23
South & East Asia	233	25	15	6
East Europe & Central Asia	277	231	238	5
Latin America & Caribbean	13	34	89	9
All developing countries in sample	144	77	76	9

Source: Estimated using country data compiled by Easterly (2006) using the sum of export and import revenues as weights.

Table 3. Effects on Sectoral Value Added of Removing all Merchandise Import Tariffs and Agricultural Subsidies as of 2001 (percent)

Region:	Primary agricultural value added	All non-agricultural value added
Sub-Saharan Africa	2.3	2.7
South Asia	0.3	-0.1
E. Asia (excl. Ja, Ko, Ta)	9.5	5.0
Latin America	11.5	-0.2
All Developing Countries	5.6	2.0

Source: Anderson and Valenzuela (2007)

Table 4. Impact of Full Liberalization of OECD Agricultural Tariffs and Subsidies on Sub-Saharan Africa

	Change in regional welfare ($billion) due to:		
	Change in export prices	Change in import prices[b]	Sum of export and import price effects
Agric and food products – all SSA	0.94	-0.38	0.56
South Africa	0.05	-0.09	-0.04
Other Southern Africa[a]	0.36	-0.03	0.33
Rest of Sub-Saharan Africa	0.53	-0.25	0.28
Non-agricultural products – all SSA	1.45	-0.53	0.92
South Africa	0.35	-0.15	0.20
Other Southern Africa[a]	0.37	-0.10	0.27
Rest of Sub-Saharan Africa	0.72	-0.29	0.43

[a] Botswana, Madagascar, Malawi, Mozambique, Tanzania, Uganda, Zambia, Zimbabwe.

[b] The numbers in this column have the opposite sign to the import price indexes in part (a) of this Table because an import price rise reduces real income (whereas numbers in the export columns have the same sign).

Source: Anderson, Martin and van der Mensbrugghe (2006c, Tables 5 and 6)

Notes

[1] Argentina re-introduced export taxes in late 2001, ranging from 5 to 20 percent.

[2] A similar result is found by Tangermann (2005).

[3] If such growth in protection had been the counterfactual used by modelers assessing the consequences of China's WTO accession, instead of assuming the status quo, the estimated national and global welfare benefits would have been several times larger.

[4] Evidence of such a bias in public expenditure in Latin American countries has been analysed by Lopez and Galinato (2007).

[5] Recent assessments of the role of economists and economic analysis in trade policy formulation conclude that while their contributions cannot be expected to be major, it can make a difference when carefully timed and targeted (Anderson 2005, Evenett 2006).

[6] Even though this violates the WTO's national treatment rule, it apparently is not an uncommon practice in poorer countries where it is claimed to be too expensive to collect VAT on farm products. And with more than 100 countries now imposing value added taxes of 10 percent or more (Ebrill et al. 2001), this practice may be adding substantially to delivered rates of agricultural protection in developing countries.

[7] When services distortions are not included, there is the same problem with interpreting the welfare effects of goods trade reform generated by a general equilibrium model as there is from a partial equilibrium model of a subset of markets in the presence of distortions in other markets of that economy. For example, if services distortions exceed goods protection then decreasing the latter could worsen national economic welfare even though an economy-wide model which specifies zero distortions for services markets would suggest a welfare gain from a goods protection cut. Overcoming this problem

requires building on the pioneering work reported in Findlay and Warren (2000) on measuring the extent of distortions to markets for services, and that of Jensen, Rutherford and Tarr (2006) and others who are incorporating those measures in their models.

[8] This phase will include analyzing the effects on poverty, building on recent frontier work by Hertel and Winters (2006) and Hertel et al. (2006).